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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,176	01/15/2004	Richard Reynolds	830_012	4849

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EXAMINER	
WEST, JEFFREY R	
ART UNIT	PAPER NUMBER
2857	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/22/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/758,176	REYNOLDS ET AL.	
	Examiner	Art Unit	
	Jeffrey R. West	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on November 20, 2006, and December 13, 2006, have been entered.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-5 and 9 are considered to be non-statutory. It has been held that the

claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result is "useful, tangible and concrete."

Furthermore, a process that consists solely of the manipulation of an abstract idea is not concrete or tangible. See In re Warmerdam, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also Schrader, 22 F.3d at 295, 30 USPQ2d at 1459.

Independent claim 1, and consequently dependent claims 2-5, provides a concluding step of "generating an estimated mean opinion score in dependence upon said set of parameters". This final step of "generating" does not produce a "useful, concrete and tangible result" but is instead a result of internal data manipulation that is not externally conveyed, specifically the method does not output, store, or produce any tangible form of the mean opinion score to accomplish a practical application. Also, since the resulting mean opinion score is not used for

any intended purpose, it appears to be only a starting point for future application. For these reasons, claims 1-5 are considered to be non-statutory.

With respect to claim 9, it has been held that data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the

computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Independent claim 9 is considered to be non-statutory because it includes explicit "means for" language which invokes 35 U.S.C. 112, sixth paragraph, that is defined on page 13, lines 4-9 as being "a computer program encoding instructions for controlling the programmable computer" which, as noted above, does not fall into one of the statutory classes of invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, and 9, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cisco Systems, "Evaluate Network Performance with Cisco IOS® Service Assurance Agent" (Hereafter "Cisco") in view of U.S. Patent No. 6,665,317 to Scott and U.S. Patent Application Publication No. 2003/0086425 to Bearden et al.

With respect to claim 1, Cisco discloses a method of assessing speech quality transmitted via a packet based telecommunications network (i.e. voice over IP) (page 66) comprising the steps of storing a sequence of intercepted packets associated with a call (i.e. VoIP call) (page 70), each packet containing speech data

(i.e. voice) (pages 8 and 66), and an indication of a transmission time of said packet (i.e. STx) (page 65); storing with each intercepted packet an indication of an intercept time of said packet (i.e. RTx) (page 65); extracting a set of parameters from said sequence of packets wherein the extracting step comprises the sub steps of generating a jitter parameter (i.e. JitterSD) for each of a sequence of stored packets in dependence upon the difference between the transmission time of a stored packet (i.e. ST2) and the transmission time of a preceding stored packet of the sequence (i.e. ST1); and the difference between the intercept time of said stored packet (i.e. RT2) and the intercept time of said preceding packet (RT1) (page 65); and generating a plurality of other statistical jitter parameters (i.e. SumOfPositivesSD) for said stored packet in dependence upon said jitter parameter for said stored packet and said jitter parameter for any preceding stored packets (pages 66 and 72).

With respect to claim 2, Cisco also discloses determining a maximum value of the plurality of other statistical jitter parameters (i.e. MaxOfPositivesSD) (page 73).

With respect to claim 9, Cisco discloses an apparatus for assessing speech quality transmitted via a packet based telecommunications network (i.e. voice over IP) (page 66) comprising means, such as an object-oriented logic language probe in accordance with a process agent deployed and run on customer presence equipment (i.e. CPE) (pages 165-172) including a computer readable medium (i.e. memory) carrying the instruction to carry out the method when executed by a CPU (pages 143-144 and 154), for storing a sequence of intercepted packets associated with a call (i.e. VoIP call) (page 70), each packet containing speech data (i.e. voice)

(pages 8 and 66), and an indication of a transmission time of said packet (i.e. STx) (page 65); means for storing with each intercepted packet an indication of an intercept time of said packet (i.e. RTx) (page 65); means for extracting a set of parameters from said sequence of packets wherein the means for extracting comprises means for generating a jitter parameter (i.e. JitterSD) for each of a sequence of stored packets in dependence upon the difference between the transmission time of a stored packet (i.e. ST2) and the transmission time of a preceding stored packet of the sequence (i.e. ST1); and the difference between the intercept time of said stored packet (i.e. RT2) and the intercept time of said preceding packet (RT1) (page 65); and means for generating a plurality of other statistical jitter parameters (i.e. SumOfPositivesSD) for said stored packet in dependence upon said jitter parameter for said stored packet and said jitter parameter for any preceding stored packets (pages 66 and 72).

As noted above, the invention of Cisco teaches many of the features of the claimed invention and while the invention of Cisco does teach extracting a set of jitter parameters to assess speech quality of a VoIP network as well as determining a maximum of the extracted parameters, Cisco does not explicitly include means for determining a long term average or differential jitter parameter of the extracted parameters or generating an estimated mean opinion score in dependence upon said set of parameters.

Scott teaches a method, system, and computer program product for managing jitter of packets across a VoIP system (column 1, line 65 to column 2, line 2) that

uses a sliding window to calculate a long term jitter parameter in dependence upon a value of jitter for a stored packet and a value of jitter for any preceding stored packets (column 5, lines 22-23 and 41-46) and a differential jitter (i.e. jitter variance) in dependence upon the jitter parameter and the long term jitter parameter (column 5, lines 22-25).

Bearden teaches network traffic generation and monitoring systems and methods for their use in testing frameworks for determining suitability of a network for target applications, such as VoIP network applications (0006, lines 1-10), comprising means for extracting a set of speech quality parameters, including jitter, and, generating an estimated mean opinion score in dependence upon the set of speech quality parameters (0085, lines 1-13).

It would have been obvious to one having ordinary skill in the art to modify the invention of Cisco to explicitly include means for determining a long term average and differential jitter parameter of the extracted parameters, as taught by Scott, because, as suggested by Scott, the combination would have improved the speech quality analysis of Cisco by determining a more complete group of jitter parameters including a jitter variation which would provide an indication as to the changes in the size of a packet from the start to destination thereby allowing the user to monitor such a size change for determining a point of insufficient quality (column 3, line 66 to column 4, line 4).

It would have been obvious to one having ordinary skill in the art to modify the invention of Cisco to explicitly include means for generating an estimated mean

opinion score in dependence upon said set of parameters, as taught by Bearden, because, as suggested by Bearden, the combination would have improved the speech quality analysis of Cisco by employing a widely used, accepted, and understood scale of speech quality (0085, lines 1-13) and reducing the burden of a user to interpret the jitter results by instead providing the result in a clearly understandable numerical index of quality (0238, lines 24-38).

7. Claims 3-5, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cisco in view of Scott and Bearden et al. and further in view of U.S. Patent Application Publication No. 2003/0018450 to Carley.

As noted above, Cisco in combination with Scott and Bearden teaches many of the features of the claimed invention and while the invention of Cisco, Scott, and Bearden does teach extracting a set of parameters from a sequence of packets including a jitter parameter, long term average jitter parameter, differential jitter parameter, and maximum value of the plurality of extracted parameters, the combination does not specifically include determining a variance value of the measured parameter and a subsequent average of the maximum and/or variance value.

Carley teaches a system and method for providing composite variance analysis for network operation of a packet based network (0002, lines 1-9 and 0017, line 1 to 0024, line 3) comprising means for extracting and storing a jitter parameter performance metric for a sequence of packets (0041, lines 1-23) determining a

variance statistic for the performance metric and determining a subsequent standard deviation of the determined variance statistic (0047, line 4 to 0048, line 7), wherein the variance statistic includes a plurality of maximum values and standard deviations of sub-sequences of the performance metric (0068, lines 11-19). Therefore, Carley teaches determining both a maximum of the performance metric followed by a standard deviation of the maximum as well as a standard deviation of the performance metric followed by a subsequent standard deviation. It is further considered inherent that in order to determine each standard deviation, an average and variance must first be determined (see for example, Internet Glossary of Statistical Terms, "Variance" and "Standard Deviation").

It would have been obvious to one having ordinary skill in the art to modify the invention of Cisco, Scott, and Bearden to include determining a variance value of the measured parameter and a subsequent average of the maximum and/or variance value, as taught by Carley, because the invention of Cisco, Scott, and Bearden does teach a method for assessing the quality of speech packets but provides no significant method for determining when a speech quality degrades below a desired level and the invention of Carley suggests that the combination would have improved the method of Cisco, Scott, Bearden and by allowing the user to determine the quality with greater detail by determining how the performance of a given network server is performing with respect to any desired performance metric over time as well as determine whether the performance of a network service at any particular time is outside of acceptable limits (0040, lines 1-28).

Response to Amendment

8. The declaration under 37 CFR 1.132 filed December 13, 2006, is sufficient to overcome the rejection of claims 1-5 and 9, under 35 U.S.C. 112, first paragraph, as well as the outstanding specification objection based upon Applicant's assertion that one having ordinary skill in the art would recognize that the determination of lt_jitter is an ongoing, iterative process with an initial value for lt_jitter of 0.

Response to Arguments

9. Applicant's arguments with respect to claims 1-5 and 9 have been considered but are moot in view of the new ground(s) of rejection.

The following arguments, however, are noted:

Applicant argues:

> The Examiner correctly asserts that Cisco does not include means for determining a long term average or differential jitter parameter of the extracted parameters or generating an estimated mean opinion score in dependence upon the set of parameters. As with Cisco, Bearden also relates merely to the evaluation of network performance and does not disclose or suggest the use of a jitter differential parameter, and fails to disclose or suggest that such a parameter would be a useful measure for assessing speech quality. Applicants respectfully submit that the omission of such differential jitter parameters from the documents of Cisco and Bearden point to the inventiveness of the use of such parameters for use in a method for assessing speech quality.
>
> Scott relates to methods and systems for managing jitter. The Examiner's citation to column 3, line 66--column 4, line 4 of Scott for its apparent disclosure for improving speech quality is unfounded. Scott does not provide any disclosure or suggestion that using a jitter differential parameter would or could be usefully employed in a method of assessing speech quality. Scott clearly fails to provide any indication that a jitter differential parameter would be useful to achieve a method of assessing speech quality.

The Examiner asserts that the invention of Bearden is not included to teach the use of a jitter differential parameter as this feature is taught by Scott.

The Examiner maintains that Scott teaches a method, system, and computer program product for managing jitter of packets across a VoIP system (column 1, line 65 to column 2, line 2) that uses a sliding window to calculate a long term jitter parameter in dependence upon a value of jitter for a stored packet and a value of jitter for any preceding stored packets (column 5, lines 22-23 and 41-46) and a differential jitter (i.e. jitter variance) in dependence upon the jitter parameter and the long term jitter parameter (column 5, lines 22-25).

The Examiner also maintains that in light of Cisco's teaching of extracting a set of jitter parameters to assess speech quality of a VoIP network, it would have been obvious to one having ordinary skill in the art to modify the invention of Cisco to explicitly include means for determining a long term average and differential jitter parameter of the extracted parameters, as taught by Scott, because, as suggested by Scott, the combination would have improved the speech quality analysis of Cisco by determining a more complete group of jitter parameters including a jitter variation which would provide an indication as to the changes in the size of a packet from the start to destination thereby allowing the user to monitor such a size change for determining a point of insufficient quality (column 3, line 66 to column 4, line 4).

Applicant then argues:

With regard to the rejection of claims 1, 2 and 9 under § 103(a) over Cisco in view Scott and further in view of Bearden, Applicants respectfully submit that the

arguments provided in the Amendment filed October 19, 2006 overcome the present rejection. Additionally, while Applicants agree that Scott discloses the calculation of an average jitter based on packets contained within a sliding window, Applicants respectfully submit that Scott fails to disclose or suggest a method including generating a *long term average jitter parameter* in dependence upon the value of the jitter parameter for the stored packet and the value of the jitter parameter for *any proceeding stored packets*, as recited in claim 1 and 9.

The Examiner asserts that Scott specifically discloses:

A method, system, and computer program product is provided that manages jitter in packet-switched networks. In one embodiment, the present invention manages jitter in a VoIP system that includes a framer, a traffic analyzer, and a jitter manager. (column 1, line 65 to column 2, line 2)

Otherwise, average jitter is calculated using the sliding window array 730, and jitter variation is the absolute value of the difference between the present jitter and average jitter. In one example, the average jitter is calculated by summing the jitter values over a number of jitter points. More specifically, the sliding window array 730 stores the jitter, jitter variation for the last Ns packets (Ns is a variable). J[1] refers to most recently stored jitter value, J[Ns] refers to the oldest jitter value that is still stored. Similarly, JV[1] refers to most recently stored jitter variation value, JV[Ns] refers to the oldest jitter variation value that is still stored. Updating the sliding window (step 850) consists of shifting J[1] into J[2], J[2] into J[3], and storing the new value in J[1]. The value previously stored in J[Ns] will be lost in this process. The same procedure is used to update JV values. The sliding window array 730 stores the jitter and jitter variation (step 840). The sliding window array 730 is updated with these jitter statistics for each packet (step 850).

In one embodiment, the average jitter is calculated (step 860) by computing Jave=(Cw[1] x J[1]+Cw[2] x J[2]+ . . . +Cw[Ns] x J[Ns])/(Cw[1]+Cw[2]+ . . . +Cw[Ns]). For this embodiment, Cw[1 . . . Ns] are co-efficients that are used to give more weighting to certain packets in relation to one another within the sliding window array 730. (column 5, lines 22-46)

As can be seen by the cited sections above, the invention of Scott discloses generating an average jitter parameter over time for a plurality of packets with the average jitter parameter being in dependence upon the jitter of a current stored packet as well as the jitter of any of the previously stored packets. Therefore, the

Examiner maintains that Scott does disclose generating a long term average jitter parameter in dependence upon the value of the jitter parameter for the stored packet and the value of the jitter parameter for any proceeding stored packets.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure:

Internet Glossary of Statistical Terms, "Variance" and "Standard Deviation" teaches the definitions for "Variance" and "Standard Deviation" as well as that in order to calculate the variance, a mean/average must first be determined, as well as that in order to calculate the standard deviation, a variance must first be determined.

Rix, et al, "The perceptual analysis measurement system for robust end-to-end speech quality assessment" teaches an objective model designed to evaluate the perceived speech quality of voice over IP.

Rix et al, "Perceptual evaluation of speech quality (PESQ)-a new method for speech quality assessment of telephone networks and codecs" teaches a new model for speech quality assessment for use across a wider range of network conditions including analog connections, packet loss and variable delay.

U.S. Patent Application Publication No. 2003/0072269 to Teruhi et al. teaches a data transmission control method, program therefore and data transmission unit for determining packet quality.

U.S. Patent Application Publication No. 2002/0141392 to Tezuka et al. teaches a gateway apparatus and voice data transmission method.

U.S. Patent Application Publication No. 2002/0051464 to Sin et al. teaches a method for monitoring the quality of transmission across packet-based networks.

U.S. Patent No. 6,928,473 to Sundaram et al. teaches a method for measuring network jitter on application packet flows.

U.S. Patent No. 6,363,429 to Ketcham teaches a method and system for automatic determination of priority data streams on computer networks.

U.S. Patent No. 6,327,274 to Ravikanth teaches a method for estimating relative skew between clocks in packet networks.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey R. West
Examiner – AU2857

December 18, 2006